8

Reclamation Master Plan

A Proposed Land Use Plan:

Surrounding 17 Acres of the closed Industrial Excess Landfill

Lake Township-Stark County, Ohio

January 2003

Acknowledgements

IEL Community Advisory Group (CAG)

Mission Statement:

To provide informed community input into the remediation plan and the ultimate return to community use of the Industrial Excess Landfill Superfund Site and the surrounding acreage

In November 2002, USEPA announced an amended record of decision to use natural attenuation as the primary clean-up method

Lake Township

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Welcome

The development and publication of this information was made possible through a USEPA grant to the Board of Lake Township Trustees. The grant was awarded to the Board to study reuse of the IEL, a USEPA Superfund site and surrounding property located in Uniontown, Lake Township, Ohio. A Community Advisory Group (CAG) was formed to assist in the effort to solicit community input into various reuse scenarios. The IEL and one surrounding property is privately owned while all of the other surrounding properties are owned by the U.S. Government. Once the final remedy for the site is implemented, the properties, by past agreement with the state of Ohio, will be deeded to and maintained by the State. However, the Board of Lake Township Trustees has asked for either ownership or control over the surrounding properties to provide for local oversight of the area.

Contents

Introduction

- The Lake Township Community Advisory Group (CAG) was formed in 2000 after the Federal Government granted $100,000 to Lake Township to study the potential redevelopment of the landfill and surrounding properties
- Kerr+Boron Associates was selected to provide a master plan for the reclamation of the IEL surrounding properties

What is IEL?

The Industrial Excess Landfill (IEL), a former sand and gravel quarry, occupies a thirty-acre site on the East Side of Cleveland Avenue in Uniontown, Ohio. Beginning in the 1960's, the site obtained permits to accept industrial, commercial, and residential waste. More than three hundred entities deposited waste at the landfill during its operation. Companies in the Akron and Canton area used the landfill for the deposit of industrial waste in both liquid and solid form. After a fire occurred at IEL in 1972 the Stark County Board of Health ordered that all liquid dumping be stopped. The IEL continued to accept solid waste and residential trash thereafter until the site was closed in 1980.

Introduction

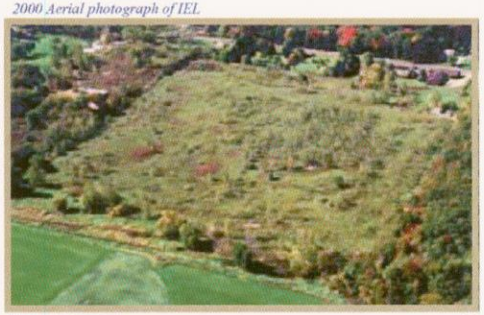
The purpose of this land use study is to investigate the redevelopment of approximately seventeen acres surrounding the Industrial Excess Landfill and to integrate it with the remedial work that will be developed as a result of the amended Record of Decision (ROD) issued for the site by USEPA in 2002. The scope of the project is to develop a master plan that primarily addresses the potential reuse of the surrounding seventeen acres while also considering the proposed design for the landfill and neighborhood and community issues.

Goals

The goals of this land use study and master plan are to recommend comprehensive solutions that educate the community concerning the previous impacts of the IEL and inspire the highest and best reuse of the surrounding property.

IEL Superfund site sign

2000 Aerial photograph of IEL



http://www.ielcleanup.com/

NORTH

Street map of IEL location

Site acreage

Arriving at the Design

Process

The process for a land use study and master planning project begins by understanding the fundamentals of landscape ecology.

Landscape ecology is the investigation of landscape elements and their related functions; while seeking the revelation of the diverse systems within landscape typologies. The objective of landscape ecology is the comprehensive understanding of a landscape that guides the decision process for either preservation or alteration of a landscape. The process for this understanding can be described in the following seven tasks:

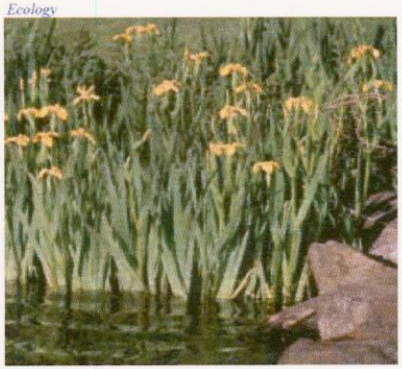
- *Contextual influences: insight to a specific idea*
- *Data collection: the process of gathering information*
- *Analysis:the examination of parts*
- *Synthesis: the putting together of elements*
- *Discovery: the act of revealing*
- *Vision: a mental images produced by the imagination*
- *Strategies: a proposed course of actions*

If a design process follows the fundamentals of landscape ecology, then the results should be design solutions that evolve from the site and respects the future.

These photographs illustrate various landscape elements. The images were used to influence the process of landscape ecology and the creation of the reclamation plans for the IEL surrounding properties.

Activity

Ecology



Flora

Towers

Fauna

Boardwalk

Inspiration

Case Studies

Gas Works Park - Seattle, Washington

Gas Works Park was an abandoned industrial facility in Seattle, Washington. It was turned into a park in 1975. The designer, Richard Haag, wanted to include pieces of industrial relics. The costs of removing all of these relics was prohibitive so they stayed on the site as a reminder of the industrial past. This park was used as a precedent because of these relics and the possibility of historical interpretation.

Fresh Kills - Staten Island, New York

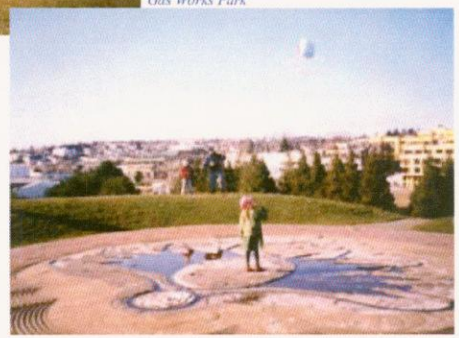
Fresh Kills was the landfill that received all of N.Y.C. municipal wastes. It was officially closed in March of 2001, but was reopened after September 11, 2001 because of the need to use it as controlled storage of the debris from the World Trade Center Towers. This was used as a precedent because, prior to the attacks, the final master plan for the site was a combination active and passive recreation space. This would have included large areas for ecological restoration and habitat enhancement.

Gas Works Park

Gas Works Park 1990

USGS aerial map

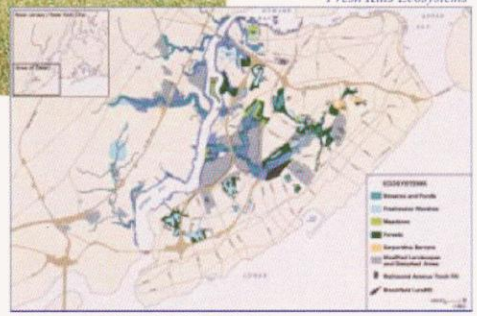
Gas Works Park



Fresh Kills Landfill

http://www.nyc.gov/html/dcp/html/fkl/ada/about/large-ecosystems.html

Fresh Kills Ecosystems



http://www.nyc.gov/html/dcp/html/fkl/ada/about/1_2_2.html

Regional Context

2000 Lake Township Census Data

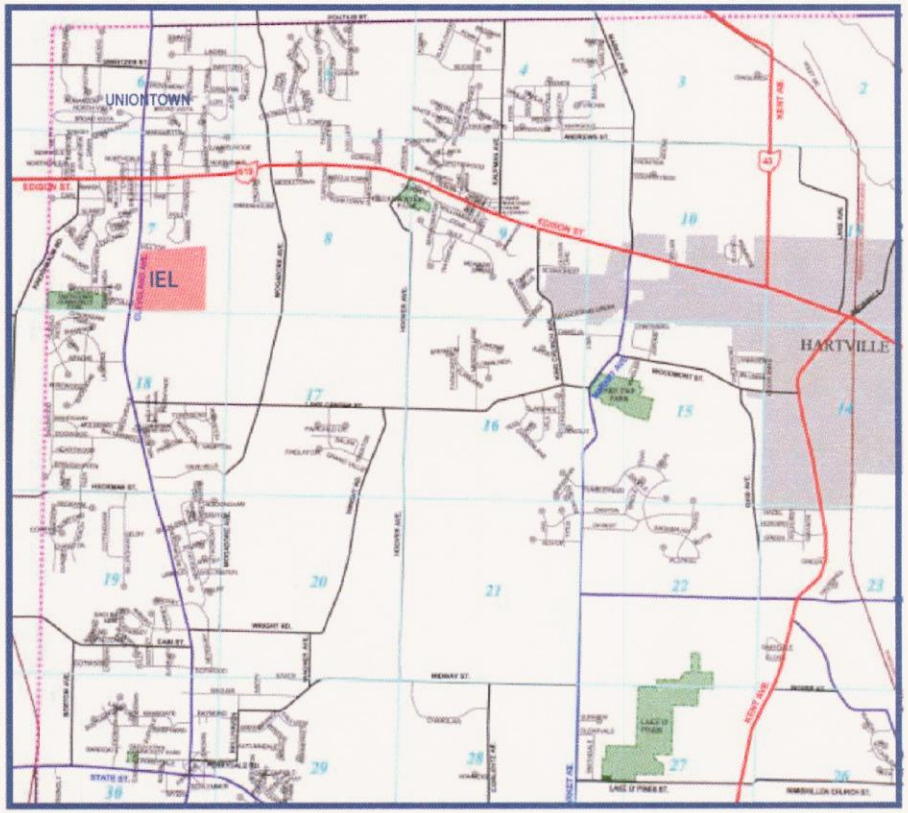
- 25,892 total population
- 9,166 total households
- 7,509 Owner-occupied Households
- 3,775 Households with individuals under 18
- 1,731 Households with individuals 65 years and older
- Average family size 3.16

Regional Context

The regional context focused on Lake Township and the Village of Hartville. The Township is situated in Northern Stark County and shares boundaries with both Summit and Portage Counties. The Township is primarily zoned for low density housing. The majority of current land-uses are agriculture and single-family detached homes. Despite its rural characteristics, Lake Township is one of the fastest growing residential communities in the State of Ohio. The Village of Hartville is situated in the Northeast quadrant of the Township. The major roads for the Township are SR 619 (Edison Street) and SR 43 (Kent Avenue/Prospect). Another important north-south thoroughfare is Cleveland Avenue. The Township is in the Erie/Ontario Drift and Lake Plain Eco Region. The ecosystem is the Summit Interlobate Plateau. The physiographic description includes numerous lakes, wetlands, sphagnum bogs, sluggish streams, kames, and kettles. The substrate is often sandy outwash and till. Mixed oak forest originally dominated well-drained areas. The land use characteristics today are woodland, peatland, agriculture, gravel quarries, and urban/suburban development.

Reference Maps

Stark County Map *Source: State of Ohio*



Lake Township Map *Source: Lake Township*

Regional Greenway Connections

- IEL Site is within one mile of two major trail systems
- Buckeye trail is a 1300 mile state wide trail
- Scenic Rail Trail connects Cleveland, Akron, and Canton along a 40 mile railroad corridor
- IEL site may connect with the Quail State Park via the Buckeye Trail

Linking to the Regional Greenway & Park Systems

The potential for linking to regional greenways and park systems is an important consideration for the project. While, some of these systems are existing and others are proposed, potential connections need to be thoroughly examined. The primary objective is to increase awareness for the project and to provide for the opportunity of the project to link up with these greenways.

Buckeye Trail—Statewide Loop Trail

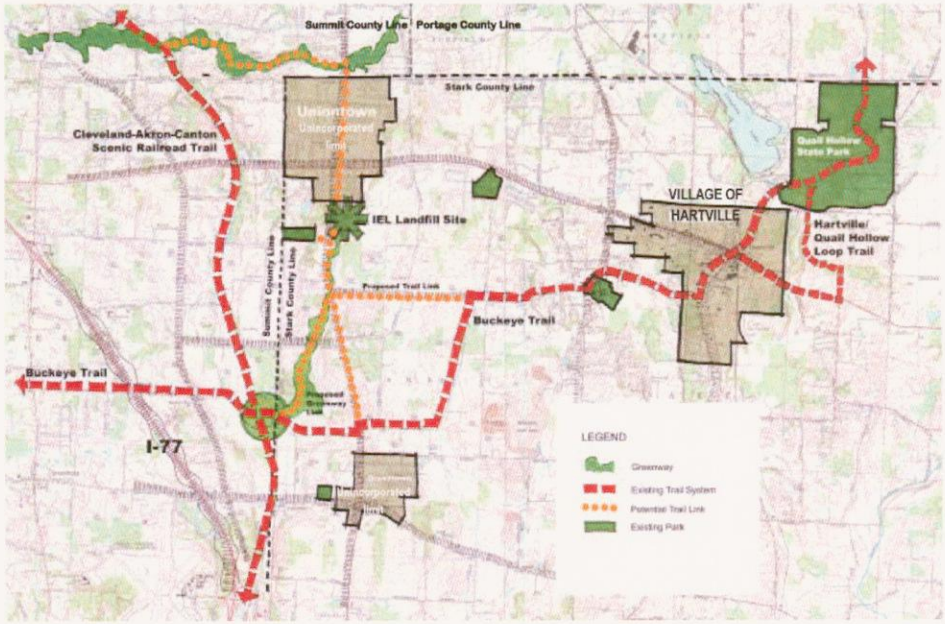
For nearly 1300 miles, the Buckeye Trail winds around Ohio, reaching into every corner of the state. From a beachhead on Lake Erie near Cleveland, to a hilltop overlooking the Ohio River in Cincinnati, a hiker can experience some of what Ohio has to offer.

Scenic Railroad Trail—Cleveland/Akron/Canton

The Scenic Railroad Trail is a proposed connection from Cleveland to Canton via Akron. This trail is being pursued by the Cleveland MetroParks, as well as MetroParks serving Summit County, and Stark County Parks. This trail will be located approximately 1.5 miles from the site with a strong possibility for a connection to it .

Quail Hollow State Park

Quail Hollow State Park, located outside Hartville, Ohio, is a wonderful example of rolling meadows, marshes, pine and deciduous woods surrounding a 40-room manor. Scenic woodland trails, gardens and the house offer a variety of natural and cultural experiences for visitors.



Potential Greenways and Connections

Existing Conditions (2000-2002)

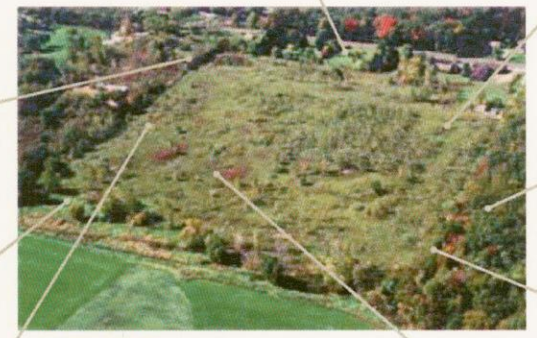
- Upland Young-Mature Forest
- Successional Old Field and scrub/shrub vegetation
- Agriculture Ditch and Wetlands Complex
- Remnant residential Landscape Tree and Shrubs


View looking into old homestead sites

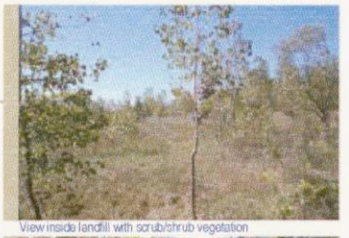

View looking into landfill


View looking into old wet meadow complex

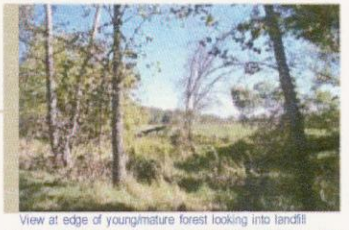

View looking along fence line looking back to wet meadow


http://www.telclteamsp.com

The IEL is a 47 Acre site (30 acres of the former landfill and 17 acres of primarily US Government-owned properties around the landfill) consisting of three ecosystems. The north and south edges are a upland young/mature forest, the former landfill is a successional old field/woods with some scrub/shrub areas while the east edge is Metzger's Ditch, an agriculture channel and wetland complex. The west edge contains mature landscape trees and plant material left over from previous residential sites.


View inside landfill with scrub/shrub vegetation


View looking into young/mature forest


View at edge of young/mature forest looking into landfill


View inside landfill looking at upland old field vegetation

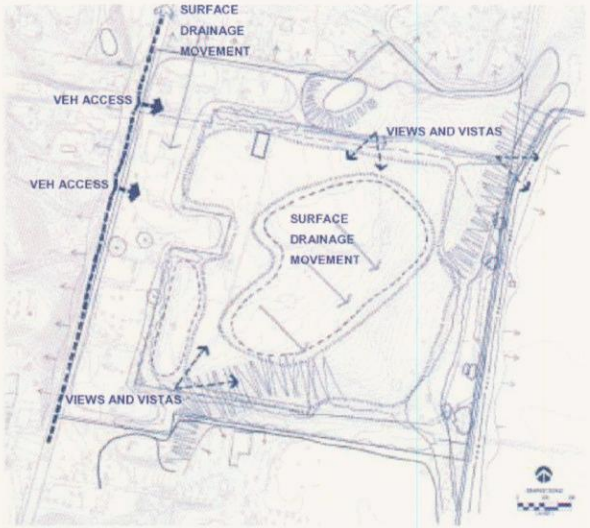
Site Analysis

- Access: a means of approaching, entering, exiting, communicating with, or making use of
- View and Vistas: a way of showing or seeing something, as from a particular position or angle; a distant view or prospect, especially one seen through an opening
- Spatial Sequences: of relating to, involving, or having the nature of space; an order of succession; an arrangement

Access

Access to the site currently has one primary component. It is from Cleveland Avenue with two curb cuts that lead into a general parking area to the west of the landfill. There is no apparent pattern for the parking and its current condition is poor. There is a an access road leading into the landfill that is secured by a gate. The landfill is enclosed by a chain-link fence with a few access points. Since the condition of this fence is fair-poor, the present security for the landfill is an issue. The perimeter of the landfill has many access points from the neighborhoods surrounding the site.

There is an overhead electric utility line that transverses the site from west to east generally. The purpose of this line is to supply power to the methane collection system and to the sod farm to the east of the landfill.



Site Analysis: access, views and vistas, drainage

Views & Vistas

There are two prominent vistas on the site. These are on the northern and southern edges of the landfill, each looking back into the landfill. The views of the site range from broad panoramas of the surrounding landscapes like the views to Metzger's ditch and valley, to the views within the smaller ecosystem rooms.

Spatial Sequenece

The spatial sequence of the site is interpreted as four elements. The first element provides for both passage and gathering. The second deals with just passage through the perimeter areas. The third includes views into the area but with limited possibilities of access in the future. Finally the fourth regards only views into the area without the possibility of access in the near future.

Spatial Sequencing

Site Analysis

Design Issues

- Topography: slope ratios of over 15% will limit uses and begin to require special construction techniques for trails
- Limit of Buried Waste: will determine where and how major areas of the site are developed
- Vegetation: the design intent is to acknowledge existing vegetation patterns and to preserve and limit the impacts to existing vegetation as much as possible

Topography

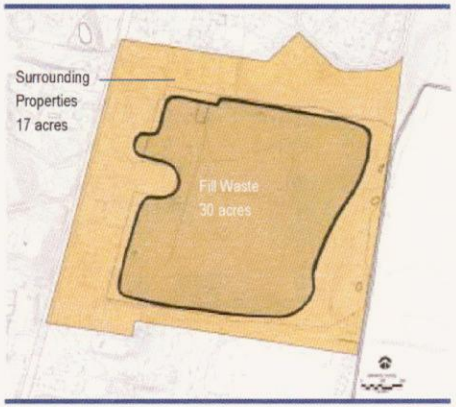
The topography is generally flat to rolling on the northern, western, and central parts of the site. The southern and eastern sections of the site have topography range from 10% to 35% slopes. There are two areas where special attention is required due to significant slope ranges. These are located on the southern edge and northeastern corner of the site.

Limit of Waste Fill

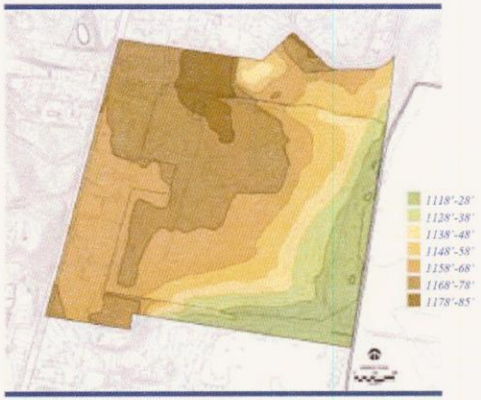
The limit of waste diagram reveals that the fill area is within the existing fence line except along the western border. There are three locations in which the limit of waste might be slightly beyond the fence line. Conversely, along the eastern border, the fill area is inside the fence line 90' to 160'. This is the area within the landfill that has the most mature vegetation

Vegetation

The landfill and adjacent 17 acres primarily consist of four ecosystems. The north and south edges are an upland young/mature forest, the former landfill is a successional old field/woods with some scrub/shrub areas while the east edge is Metzger's Ditch, an agriculture channel, and wetland complex. The west edge contains mature landscape trees and plant material left over from previous homesteads.



Limit of Waste



Topographic Analysis

Vegetation Ecosystems

Conceptual Site Diagram

Conceptual Site Diagram

The design intent consists of two principal ideas. The first deals with the existing and proposed vegetation for the 17 acres of surrounding properties and the 30 acres within the landfill. The primary existing ecosystems are:

- an upland young-mature forest
- successional grasses and scrub/shrub vegetation
- agriculture ditch and wetlands complex
- remnant homesteads landscape trees and shrubs

Vegetation proposed under the 2002 Amended ROD for the 30-acre landfill will be added to the existing vegetation and will start off as a successional woods ecosystem; that will ultimately evolve into a mature forest.

These four ecosystems are proposed to be re-created on the western side of the site. The purpose for this is to provide opportunities for education concerning the larger ecosystems by representing these as smaller systems. The result will be several diverse ecosystems at different scales. Access to the landfill proper will continue to be restricted and may not allow for human access for many years. Thus, the intention for the smaller ecosystem "rooms" is to integrate the nature preserve at a smaller scale on the surrounding properties. This will extend inaccessible ecosystems to locations where access is permitted.

The second idea is engagement with these various ecosystems. The loop trail will be the primary device for this engagement. It is proposed to be constructed on top of the linear mounds for the upper trail and as mostly boardwalks for the lower trail. The resulting trails will allow for both passage through the ecosystems and for selected opportunities for solitude and contemplation while viewing selected portions of the ecosystems.

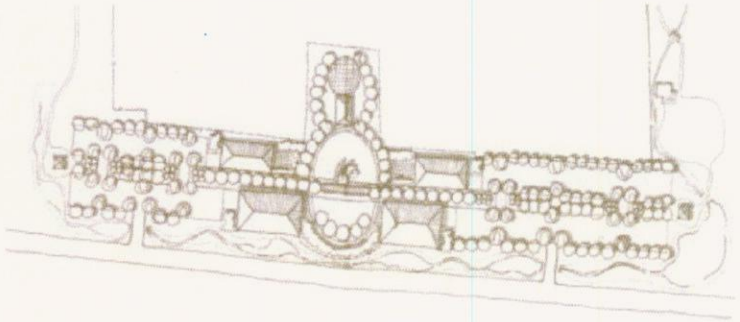
Conceptual Site Diagram: circulation, vistas, and spaces

Conceptual Studies

- Concept A: Western Reserve Civic Buildings
- Concept B: Commercial Strip Retail
- Concept C: Passive Recreation
- Concept D: Active Recreation

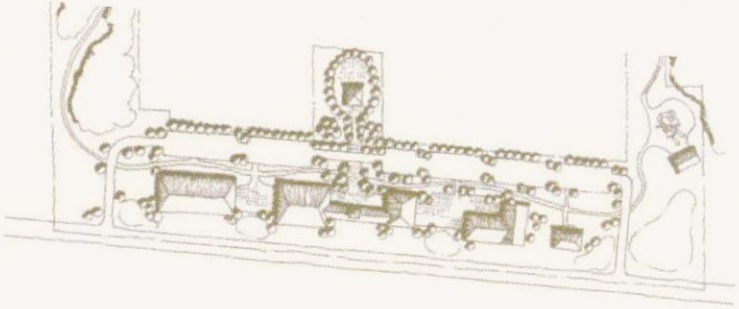
CONCEPTS

The concepts developed for the project addressed two primary issues of potential future program uses of the site. The concepts A and B considered architectural responses; while the concepts C and D dealt with issues of passive and active recreation.



Concept A: Western Reserve Civic Buildings

PROS	CONS
Formal historical interpretation	Township must develop to control outcome
Control of design (spaces/ material/ program)	Township must maintain and assume responsibility
Township identity	Similar cultural institutions nearby and may not need/ want to move
Centralize Township service	Cost to public
Other cultural institutions can help anchor complex	If landfill must be clay capped in the future, this area would need to be vacated and demolished for cap.



Concept B: Commercial Strip Retail

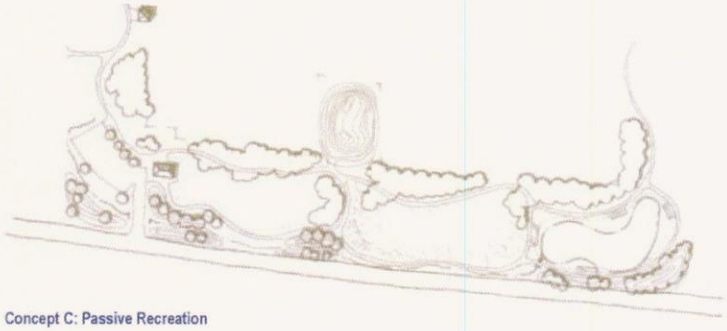
PROS	CONS
Revenue source for Township	Limited Township public/ civic spaces
Built edge between landfill and Cleveland Ave.	Developer may not like or be able to build it as proposed
Developer builds and is responsible for	If landfill must be clay capped in the future, this area would need to be vacated and demolished for cap.
Future growth opportunities for Township	Cost of development
	Cost to public

Conceptual Studies

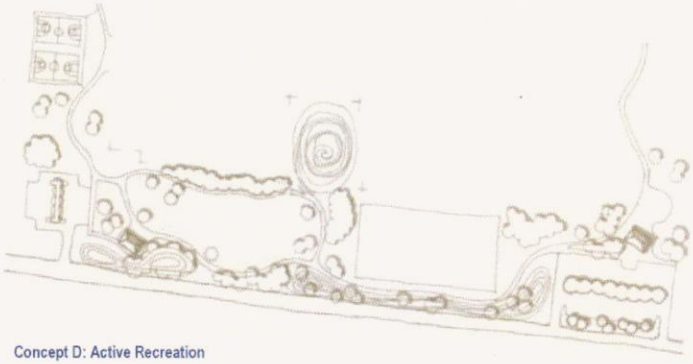
- Concept A: Western Reserve Civic Buildings
- Concept B: Commercial Strip Retail
- Concept C: Passive Recreation
- Concept D: Active Recreation

CONCEPTS

The concepts developed for the project addressed two primary issues of future program uses of the site. The concepts A and B considered architectural responses; while the concepts C and D dealt with issues of passive and active recreation.



Concept C: Passive Recreation



Concept D: Active Recreation

PROS	CONS
Lower cost , lower maintenance	Limited active recreation
Expanding proposed habitats for landfill	
Multiple park uses	
Potential ADA trails	
Increased opportunity for diverse flora and fauna	
Multiple views/vistas	
Potential facilities (shelters, restrooms, educational kiosks)	
Location for family/community events	
Allows for future access into landfill	

PROS	CONS
Various active recreational program elements	Useable area that results in sub-standard recreational sizes
Multiple park uses	Proximity to Cleveland Ave.
Limited facilities possible	Future growth/expansion will be determined by access onto landfill
Views into landfill (proposed habitats) and surrounding area	Limited trails

Final Proposed Design—'Earthscape'

Earthscape Design Intentions

- Engagement of ecosystems
- Take advantage of strategic overlooks
- Trail location that completes a circuit of the site
- Community gathering areas
- Mounding that defines access and frames views
- Sustainable stormwater management

Earthscape

The final design recommendation is the concept of Earthscape. This is an evolution of the earlier passive recreation idea; however, the concept now promotes the notion of re-creating the various existing/proposed ecosystems and allows passage through these systems. The intention is to connect with the site via trails and ecosystem rooms that promote engagement with the past and present conditions, while allowing for educational opportunities that speak to our future

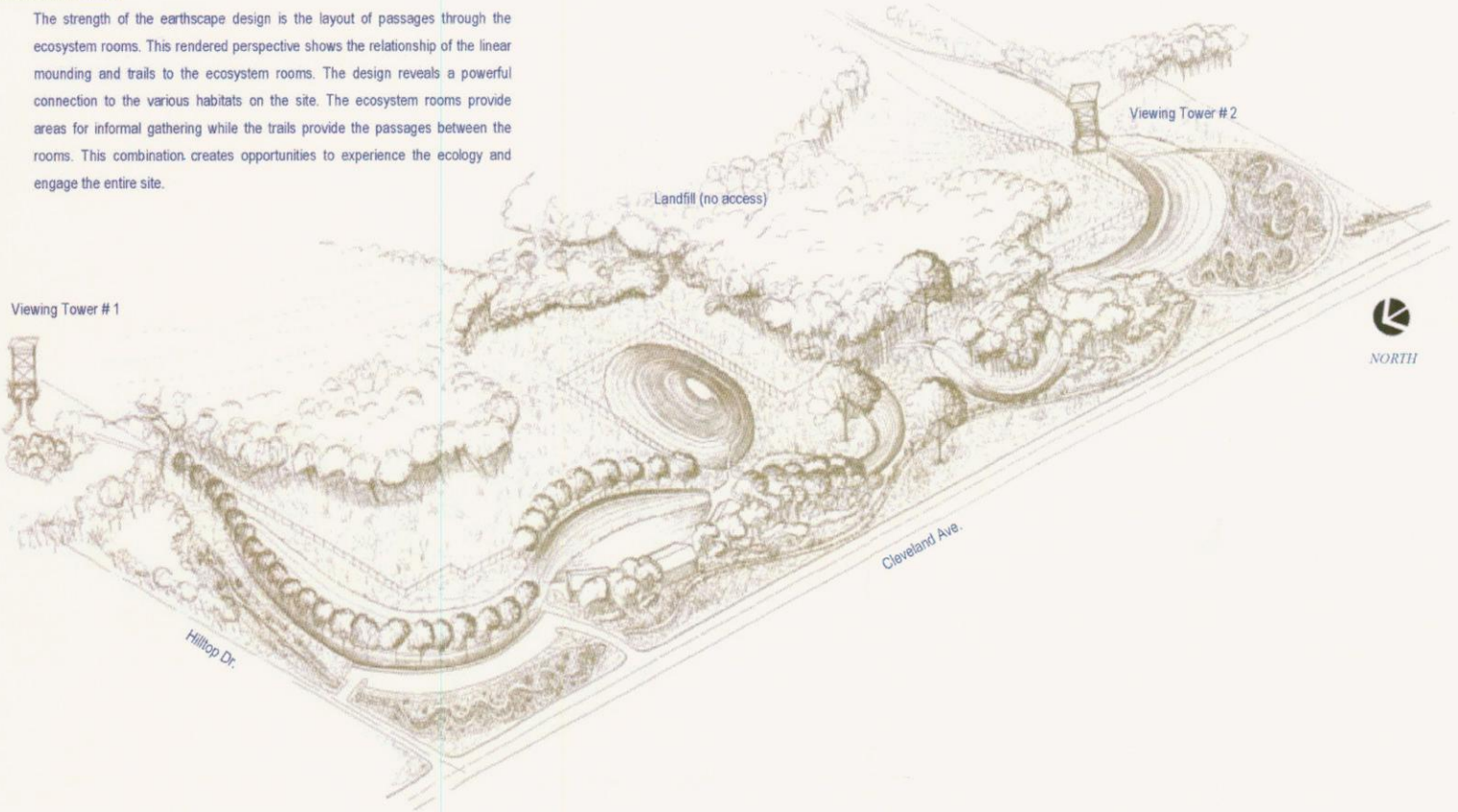
A. Main Parking Lot
B. Diversion Wetland
C. Lawn Amphitheatre
D. Grassy Commons
E. Community Shelters
F. Overlook Mound
G. Wildflower Meadow
H. Upland Forest
I. Ephemeral Stream
J. Stormwater Diversion Wetland
K. Crescent Berm
L. Tower Overlook
M. Grass Prairie
N. Wetland Boardwalk and Trail
O. Wet Meadow
P. Neighborhood Trailhead
Q. Woodland Bowl
R. Memorial Tree Planting
S. Hybrid Successional Forest
T. Trail

Rendered Master Plan

Final Proposed Design—'Perspective'

Earthscape

The strength of the earthscape design is the layout of passages through the ecosystem rooms. This rendered perspective shows the relationship of the linear mounding and trails to the ecosystem rooms. The design reveals a powerful connection to the various habitats on the site. The ecosystem rooms provide areas for informal gathering while the trails provide the passages between the rooms. This combination creates opportunities to experience the ecology and engage the entire site.

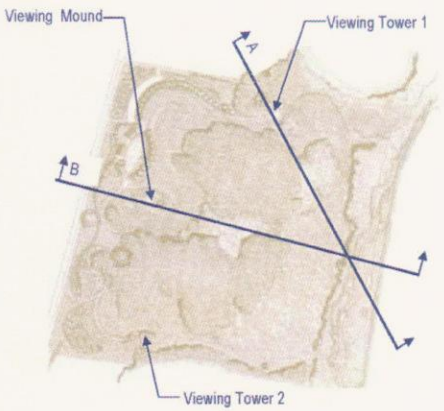


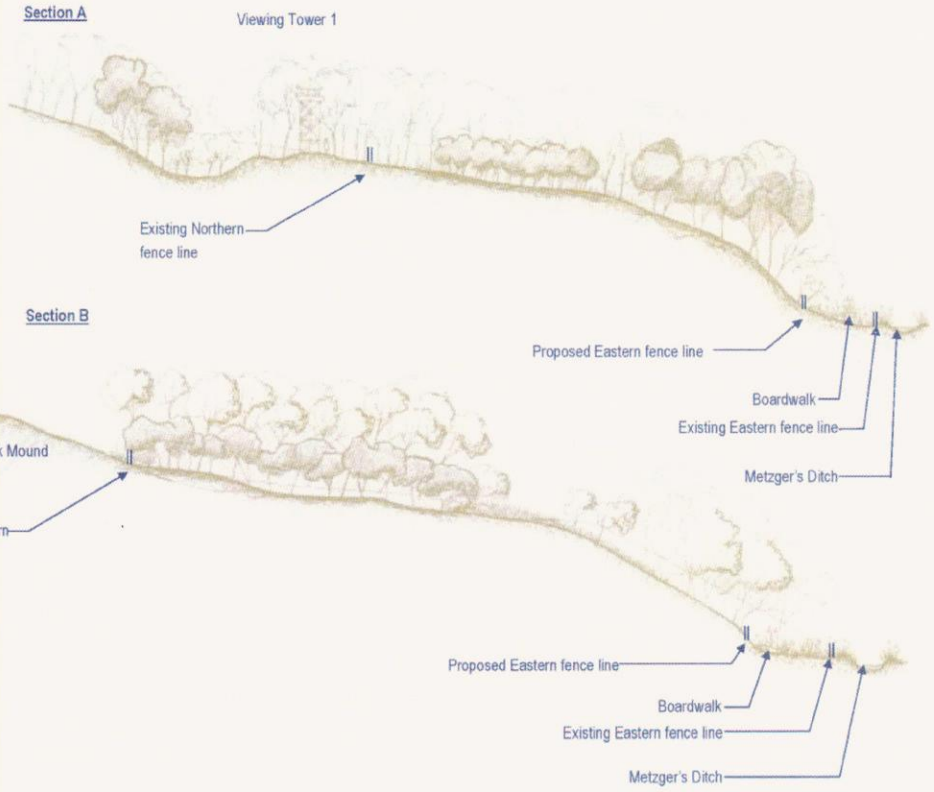
Rendered Site Plan

Cross Sections

Earthscape

The sections reveal two of the three viewing points. There are two tower overlooks proposed. One is located on the northern edge of the site and the other is located on the southern edge. Both tower overlooks would mark the extent of the upper trail. Section A shows the relationship of the northern tower overlook to the landfill vegetation and riparian corridor. The third viewing point is the overlook mound. It is proposed to be located on the western side of the site. The intention of the mound is to continue the landform design strategies of defining passage and views. Section B shows the proposed height relationships beginning at the knoll, progressing through the landfill, and finally into the wet meadow and Metzger's Ditch



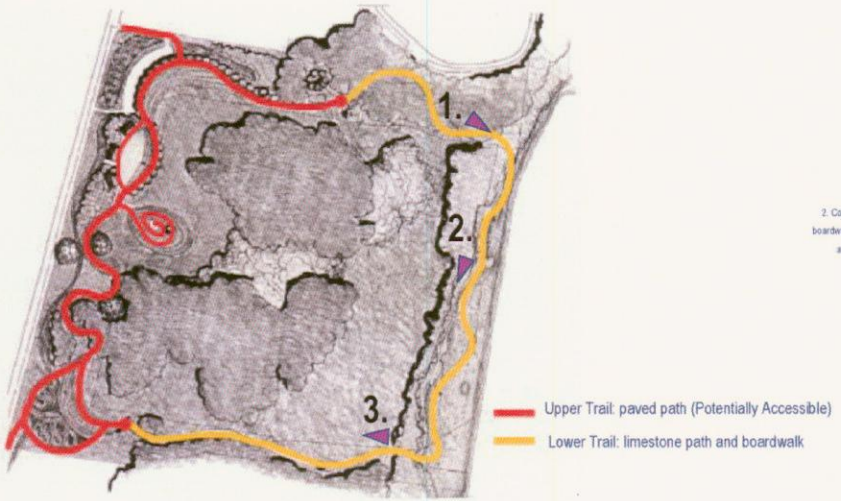


Loop Trail

- There will be approximately one mile of trails around the landfill on the surrounding properties
- The upper trail will be defined by a series of linear mounds
- The lower trail will include boardwalks for limited impacts to wetlands
- Both upper and lower trails will have educational markers and observation areas

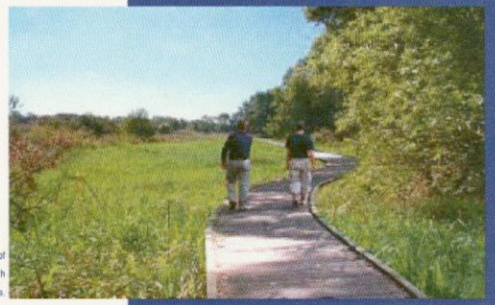
Loop Trail

The proposed loop trail completes a circuit around the entire site. It is segmented into an upper trail and a lower trail. The upper trail will be an accessible paved material. This segment allows passage through and engagement with the proposed ecosystems. The upper trail will almost entirely be on the proposed linear mounding. The intention of the upper trail is to provide a sequence of framed views of the ecosystem rooms within the landfill and surrounding properties while also allowing for moments of solitude. The lower trail will allow access into the riparian corridor and wet meadow complex. The major issues for this segment regard topography and water. There is approximately 62 feet in elevation change from the upper trail to the lower trail. In the wet meadow area standing water, saturated soils and seasonal flooding will be design considerations. The lower trail is also designed for framing views and solitude.



Loop Trail Systems

1. Computer overlay of view of trail leading into the riparian corridor and Metzger's Ditch.



2. Computer overlay of view of boardwalk within Metzger's Ditch and surrounding wetlands.

3. Computer overlay of view of trail leaving the riparian corridor looking along the edge of the landfill.

Cost Estimate & Funding Resources

Funding Resources

There may be a number of potential funding sources for the reuse scenario for the IEL surrounding properties. These include the following possibilities for the following proposed redevelopment costs.

Clean Ohio Trail Fund

The Ohio Department of Natural Resources will administer the $25 million Clean Ohio Trail Fund (COTF) over the next four years for land acquisition and the construction of recreational trails. Approximately $6.25 million will be available in each year.

Recreational Trails Program

Up to 80% matching federal funds (reimbursement) are available for development of urban trail linkages, trail heads, and trailside facilities, maintenance of existing trails, restoration of trail areas damaged by usage, improving access for people with disabilities, acquisition of easements and property, development and construction of new trails, purchase and lease of recreational trail construction and maintenance equipment, environment and safety education programs related to trails.

NatureWorks (Parks)

Local governments can apply for up to 75% reimbursement grants (state funding) for acquisition, development or rehabilitation of public park and recreation areas. The agency must have proper control (title or at least a 15-year non-revocable lease) to be eligible for development or rehabilitation grant. Eligible government agencies within each county compete for grants. All projects must be completed within one-and-a-half to two years.

Ohio Environmental Education Fund

Monies credited to the Environmental Education Fund consist of half of all penalties collected by Ohio EPA air and water pollution control programs, as well as gifts, grants, and contributions. The Director of Ohio EPA, under the advice and assistance of the Advisory Council, may award grants totaling in excess of $1 million annually. The fund must be used to enhance the public's awareness and understanding about issues affecting environmental quality in Ohio.

Five-Star Restoration Challenge Grants

The National Association of Counties, the National Fish and Wildlife Foundation, and the Wildlife Habitat Council, in cooperation with the U.S. Environmental Protection Agency (USEPA), the Community-Based Restoration Program within NOAA Fisheries, and other sponsors, are pleased to solicit applications for the Five-Star Restoration Challenge Grant Program. The Five-Star Restoration Program provides modest financial assistance on a competitive basis to support community-based wetland, riparian, and coastal habitat restoration projects that build diverse partnerships and foster local natural resource stewardship through education, outreach, and training activities.

Preliminary Cost Estimates

Surrounding 17 Acre Properties

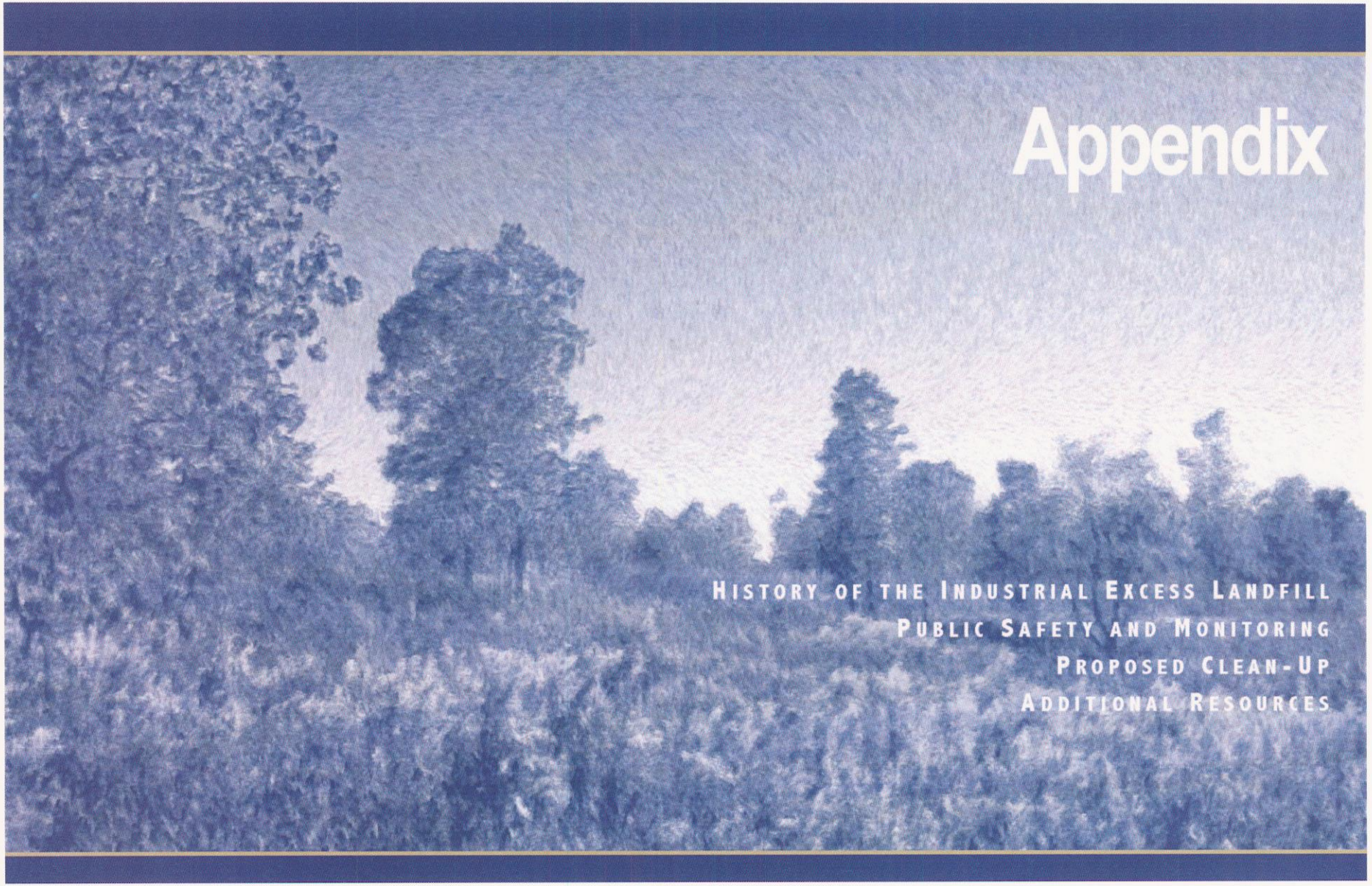
This is an estimation of construction costs, not a guarantee of actual bid prices

Date: January, 2003

ITEM	DESCRIPTION	QUANTITY	$/Unit	Total Price
1	Demolition	1 LS	$20,000	$20,000
2	General Grading & Earthwork	1 LS	$50,000	$50,000
3	Mounding	25,000 CY	$5.00	$125,000
4	Asphalt Parking Lot	2,000 SY	$35.00	$70,000
5	Paved Walk (5')	4,000 LF	$17.50	$70,000
6	Limestone Walk (5')	2,000 LF	$8.00	$16,000
7	Boardwalk (4')	900 LF	$100.00	$90,000
8	Native plantings & seeding	1 LS	$50,000	$50,000
9	Trees & Shrubs	1 LS	$30,000	$30,000
10	Lighting (security only)	1 LS	$30,000	$30,000
11	Picnic Shelter Pavilion(s)	3 EA	$50,000	$150,000
12	Towers	2 EA	$40,000	$80,000
13	Site Improvements (signage, benches, trash)	1 LS	$30,000	$30,000
			Contingency (20%)	$162,200
			Total	**$973,200**

*This estimate does not include utility extension, demolition for underground structures, work within the IEL fence line, or fence replacement.

* Cost opinion assumes 2002 pricing



Appendix

HISTORY OF THE INDUSTRIAL EXCESS LANDFILL
PUBLIC SAFETY AND MONITORING
PROPOSED CLEAN-UP
ADDITIONAL RESOURCES

Appendix/ History

- Located in Uniontown, 1/2 Mile south of State Route 619
- Former 30 Acre site of a Sand & Gravel Pit
- Beginning in the 1960's the site was used for industrial, commercial, and residential wastes
- 1971 Ohio Dept. of Health approved the landfilling of liquid wastes
- 1972 IEL stopped accepting liquid wastes but continued to accept solid and residential wastes
- The IEL landfill was closed in 1979

A Brief History of the Industrial Excess Landfill

Located in Uniontown, Ohio, about halfway between Akron and Canton, the Industrial Excess Landfill, a former sand and gravel quarry, occupies a thirty-acre site on the East Side of Cleveland Avenue, about a half-mile south of State Route 619.

In the latter half of the 1960's, those who then owned the site obtained permits to accept industrial, commercial, and residential waste. The original local permit allowed wastes such as fly ash, masonry rubble, paper, scrap lumber and other non-toxic material to be dumped on site. More than three hundred entities deposited waste at the landfill during its operation. Many companies in the Akron and Canton area used the landfill for the disposal of industrial waste in both liquid and solid form.

About 1971, The Ohio Department of Health approved a procedure for the landfilling of liquid wastes at the IEL. Liquids were to be lagooned (in a bed of fly ash) and then mixed with soil before burial. On at least one occasion, before the liquids could be mixed with soil, the liquids caught fire with an associated loss of liquid wastes. The immense fire burned for three days at the site. In 1972 the Stark County Board of Health ordered that all liquid dumping be stopped. The IEL continued to accept solid waste and residential trash thereafter until the site was closed in 1979. The U.S. Environmental Protection Agency (USEPA) placed the IEL on the National Priorities List in October 1984.

In 1985, the USEPA began remedial investigations to determine the extent of contamination at the IEL. According to the EPA's history of the site, in 1988 the Agency determined at that time that the most extensive body of contaminated material was the waste and waste-soil mixture in the landfill portion of the site; the ground water beneath and west of the site contained organic and inorganic compounds; and methane gas and other organic vapors were detected around the perimeter of the landfill. A methane venting system was installed by USEPA in 1985.

Landfill Operations in the 1960's-70's

Source: Lake Township

Source: Lake Township

Source: Lake Township

The USEPA decided in September of 1987 that about one hundred homes near the IEL should be provided with municipal water. Currently, almost every residence in the vicinity of the IEL is connected to municipal water. In 1988, the USEPA conducted a study to evaluate feasible methods for cleaning up the site. In December of that year, the USEPA first presented to the public a proposal for remediation. In conjunction with what was proposed, the U.S. Government purchased a number of properties immediately surrounding the IEL to the north, west, and south sides of the site. The US Government now owns all but one of these properties surrounding the IEL. The surrounding properties, approximately seventeen acres, formerly consisted mostly of single family residential homes or vacant land. Two of the parcels along Cleveland Avenue formerly consisted of a restaurant and a gas station/tire store. However, all structures from these two parcels have been removed and the property is now vacant.

During a USEPA public comment period in early 1989, interested parties expressed concerns about the data used to determine the proposed cleanup. The USEPA signed a Record of Decision (ROD) in July 1989, proposing a clay cap with a pump-and-treat system for the underlying ground water. as the remedy. However, in the 1990's ground water testing revealed that no contaminants above Maximum Contaminant Levels (MCLs) (drinking water standards) were detected in the groundwater off the site. Furthermore, the data indicated that natural attenuation processes were occurring at the IEL, thus reducing the number and concentration of the contaminants.

History

- USEPA placed the IEL on the National Priorities "Superfund" list in 1984
- In 1985 the USEPA began remedial investigations to determine the extent of contamination
- In 1989 the first ROD was signed calling for a clay cap with pump and treat system
- After testing in the 90's an Amended ROD was prepared in 2000 calling for a synthetic/clay cap only
- In 2002 the Second Amended ROD was signed calling for monitored natural attenuation with a vegetative cover

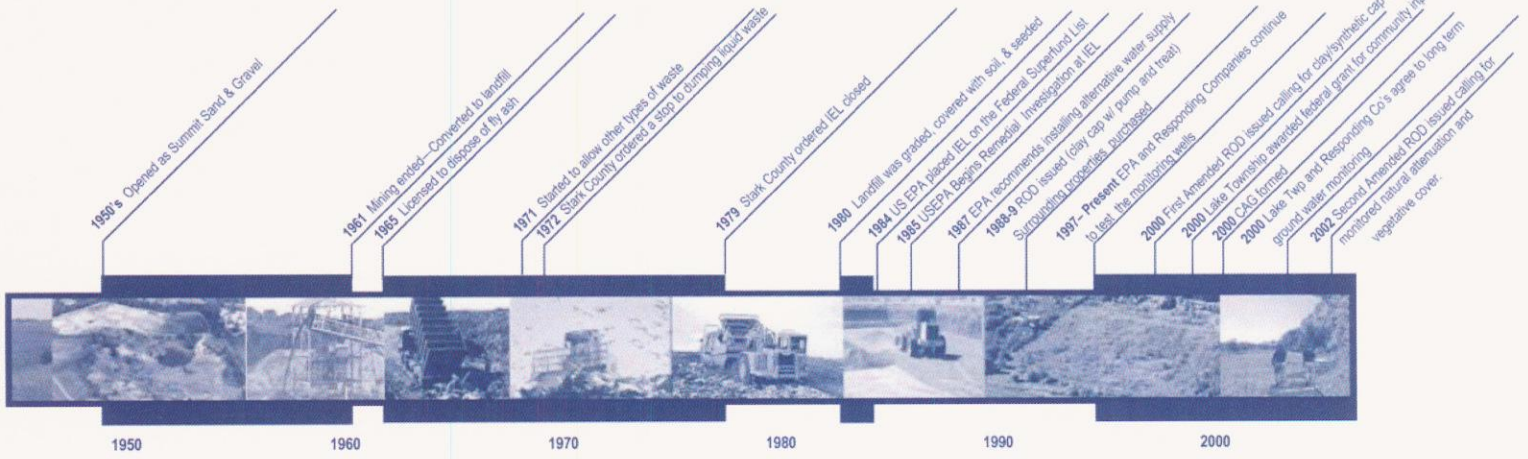
IEL Historical Timeline

After reviewing groundwater testing results, the USEPA prepared an Amended ROD in March 2000, calling for a clay and synthetic cap to be placed over the landfill, and eliminated the pump and treat system since it was not warranted. The Lake Township Trustees asked for a delay in the installation of this cap because they knew it would eliminate any possibility of further testing of the on-site and perimeter monitoring wells, which the Lake Township Trustees then felt and continue to feel is necessary and appropriate.

The Lake Township Community Advisory Group (CAG) was organized in the fall of 2000 to provide informed community input about the ultimate return to community use of the IEL and surrounding properties, and to provide community opinion about the future use of the properties surrounding the landfill site as well as the IEL itself.

In April 2002, the USEPA held a public hearing on an amendment to the 2000 ROD. The amendment called for monitoring natural attenuation, the installation of an enhanced vegetative cover at the IEL, as well as a number of additional measures, including regular ground water testing for thirty years, the installation of new wells and testing of gases and shallow soils. This second amended ROD was signed in October 2002.

Adapted from the USEPA and Lake Township Community Advisory Group
For more information see:
www.epa.gov/superfund/action/law/npl_hrs.htm
www.epa.gov/region5/superfund/rods/rod_index.html
for the 1989 ROD Go to "Industrial Excess Landfill-ROD.PDF" --USEPA Region 5 web site



Historic Contaminants

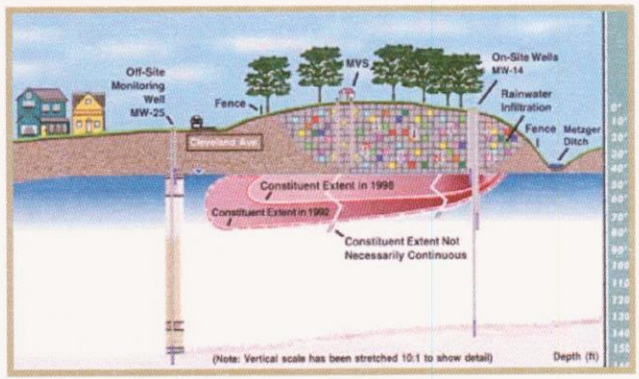
- Groundwater beneath portions of the landfill continues to be primarily contaminated with a limited number of volatile organic compounds
- The number of contaminants & associated concentrations have generally decreased over time
- Methane concentrations along the perimeter of the landfill have decreased over time

Historic Contaminants

Groundwater, beneath the landfill, continues to be primarily contaminated with a limited number of volatile organic compounds (VOCs). Data from 2000-2001 groundwater monitoring events suggests that, with the exception of benzene in the shallow groundwater in the middle of the landfill, the level of contamination is decreasing, both in terms of number of contaminants detected and in concentration. There is no evidence that groundwater contamination outside of the landfill boundary exists. Methane concentrations along the perimeter of the landfill continue to decline to the point where the existing methane venting system (MVS) is only operated periodically and must be supplemented with propane to create a burn-off flare.

Nearly all the residents downgradient of the site are now connected to municipal water, thereby minimizing potential receptors of contaminated groundwater if it moves offsite. Although there have been sporadic exceedances of metals outside of the landfill boundaries, tests of drinking water wells in 1998 revealed that such metal contaminants were significantly lower (i.e., one or two orders of magnitude less) than federal drinking water standards. Furthermore, these metals are likely not attributed to the landfill, but are likely from potential off-site sources such as septic systems.

Generalized cross section of landfill showing how the contamination plume is shrinking over time.



http://www.ielcleanup.com/

Comparing Contaminants extent in 1992 with those detected in 2002

Constituent		Highest Concentration Detected before 2000 (ug/L)	Well Location of Highest Concentration	Year Highest Concentration Detected	Range of Conc. Detected in 2000-April 2002 Low	High	July 2001 Highest Conc. (mg./L)	Well Location of Highest Concentration Apr-02	Jul-02
1	Acenaphthene	79	MW-17S	Aug-92					
2	Acetone	260	MW-09I	Dec-91					
3	Aldrin	0.82	MW-01I	Mar-97					
4	Benzene	8,300	MW-14S	Sep-98	1.2	25,000	16,000	MW-14s	MW-14-s
5	Benzo(a)pyrene	0.6	MW-13S	Dec-91					
6	Benzo(b)fluoranthene	0.6	MW-13S	Dec-91					
7	Benzo(k)fluoranthene	0.8	MW-13S	Dec-91					
8	alpha-BHC	0.06	MW-07S	Mar-97					
9	beta-BHC	0.07	MW-07S	May-92					
10	delta-BHC	0.32	MW-13I	May-97					
11	gamma-BHC (Lindane)	1.04	MW-03I	May-97					
12	Bromodichloromethane	8	MW-28D	May-92					
13	Bromoform	16	MW-28D	May-92					
14	Butyl benzyl phthalate	4	MW-08S	Dec-92					
15	Caprolactam**						95	N/A	MW-07s
16	Carbazole	1	MW-07S	May-92					
17	Carbon disulfide	22	MW-27I	Aug-92					
18	Chlorobenzene	31	MW-07S	Jul-88	4.7	6.2	29	N/A	MW-07s
19	alpha-Chlordane	0.024	MW-17S	Mar-93					
20	gamma-Chlordane	0.013	MW-17S	Aug-92					
21	Chlorodibromomethane	13	MW-28D	May-92					
22	Chloroethane	23	MW-21S	Sep-98	1.1	73	66	MW-21s	MW-21s
23	bis(2-Chloroethyl)ether	1	MW-17S	Aug-92					
24	Chloroform	3	MW-28D	May-92					
25	Chloromethane	20	MW-28D	Dec-92					
26	4-Chloro-3-methylphenol	46	MW-17S	Aug-92					
27	2-Chlorophenol	47	MW-17S	Aug-92					
28	Di-n-butyl phthalate	24	MW-10I	Nov-92					
29	1,4-Dichlorobenzene	59	MW-17S	Aug-92	2.1	9.1	6	N/A	MW-07s
30	1,1-Dichloroethane	330	MW-15S	Dec-91	2	54	25	MW-15s	MW-15s
31	1,1-Dichloroethene	7	MW-15S	Dec-91					
32	1,2-Dichloroethane	100	MW-15S	Dec-91	6	14	11	MW-15s	MW-15s
33	1,2-Dichloroethene (total)	960	MW-15S	Dec-91	2	34	10	MW-15s	MW-21s
34	4,4'-DDD	0.031	MW-14I	Aug-92					
35	4,4'-DDE	0.017	MW-10S	May-92					
36	4,4'-DDT	0.03	MW-01I	Mar-97					
37	Dieldrin	0.95	MW-03I	May-97					
38	Diethylphthalate	10	MW-14S	Dec-91					
39	3,4-Dimethylphenol	3	MW-07S	Jul-88					
40	2,4-Dinitrotoluene	10	MW-17S	Aug-92					
41	Di-n-octyl phthalate	70	MW-20D	May-92					
42	Endosulfan I	0.012	MW-14S	May-92					
43	Endosulfan II	0.19	MW-03S	Mar-97					
44	Endosulfan sulfate	0.081	MW-02D	Dec-91					
45	Endrin	1.1	MW-01I	Mar-97					
46	Endrin aldehyde	0.16	MW-18I	Mar-97					
47	Endrin ketone	0.02	MW-15S	Dec-91					
48	Ethylbenzene	1,900	MW-15S	Dec-91	2.6	29	6	MW-15s	MW-13I
49	bis(2-Ethylhexyl)phthalate	800	MW-10I	Mar-93					
50	Heptachlor	1.2	MW-01I	Mar-97					
51	Heptachlor epoxide	0.02	MW-01D	Sep-92					
52	Hexachloroethane	2	MW-15S	Aug-92					
53	2-Hexanone	2	MW-17S	Dec-92					
54	Isopropylbenzene			Aug-09	2.7	8.7	3.9	MW-17S	MW-17S
55	Methoxychlor	0.053	MW-23I	May-92					
56	Methyl Acetate			Aug-09	3.1	3.1		N/A	N/A
57	Methyl ethyl ketone	670	MW-15S	Dec-91			4.9	N/A	MW-7S
58	Methylene chloride	360	MW-15S	Dec-91					
59	2-Methylnaphthalene	3	MW-07S	Jul-88					
60	4-Methyl-2-pentanone	7	MW-13S	Aug-92					
61	2-Methylphenol	4	MW-15S	Aug-92					
62	4-Methylphenol	15	MW-07S	Jul-88					
63	Naphthalene	10	MW-07S	Jul-88					
64	n-Nitrosodi-n-propylamine	85	MW-17S	Aug-92					
65	n-Nitrosodiphenylamine	42	MW-07S	May-92			11	N/A	MW-07S
66	4-Nitrophenol	63	MW-17S	Aug-92					

Sharp and Associates, Groundwater Monitoring Report for the July, 2002 Sampling Event, dated October, 2002

Public Safety & Monitoring

- The Responding Companies and the USEPA continue to collect, evaluate, and report groundwater and health risk information on the site
- Current test results found no offsite levels exceeding USEPA safe drinking water standards
- There are 54 monitoring wells in and around the site to monitor groundwater

Clean-up Method

The properties surrounding the IEL now consist of vacant land. There was a restaurant and a gas station/tire store formerly located along Cleveland Ave. However, all underground storage tanks (USTs), buildings, and septic systems associated with these two buildings have been removed. The Ohio State Fire Marshal Bureau of Underground Storage Tank Regulations (BUSTR) issued a No Further Action (NFA) status to these sites indicating that any detected contaminants in the soil in the area of the USTs were below applicable clean up standards.

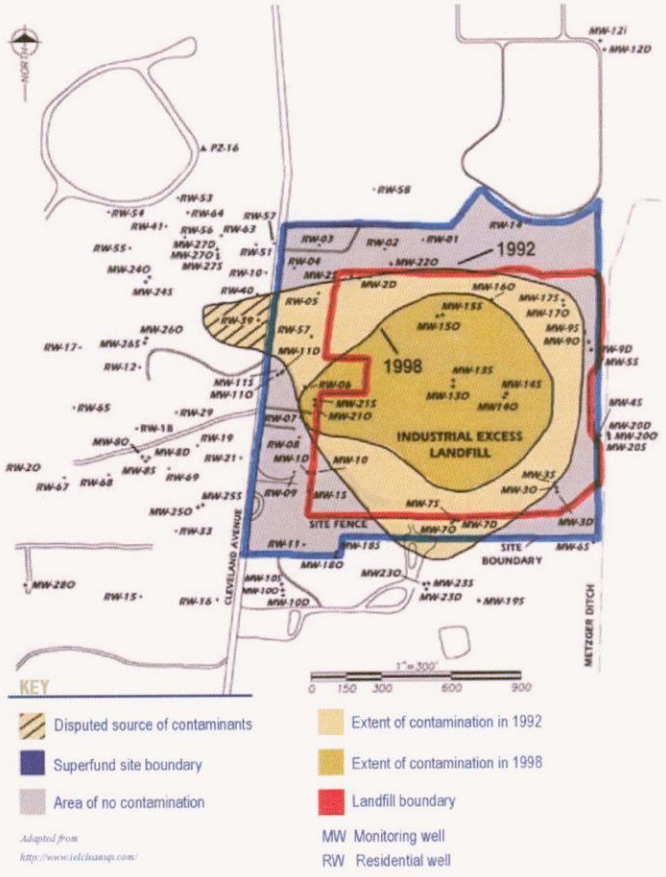
The Responding Companies and USEPA have:

- Secured the site (installed a fence around a vegetative soil cover) to minimize the potential for anyone to come into contact with landfill contents.The fence will be upgraded under the Amended ROD. Lake Township has petitioned the USEPA to move the fence line on the east end of the IEL to allow for construction of the walking trail.
- Installed a public water line for residents who were originally using groundwater wells in the vicinity of the IEL site.
- Installed a methane venting system to collect and destroy methane and other volatile compounds.
- Hired experienced and qualified environmental professionals to collect, evaluate and report on groundwater and health risk information from the site.
- Continued to test the groundwater and found that there are no contaminents offsite at levels exceeding USEPA's safe drinking water standards.
- Have agreed to work with Lake Township officials and their environmental consultant to provide long term groundwater monitoring of the site for up to 30 years.

Because community health is protected under current conditions, the natural attenuation remedy, coupled with groundwater monitoring, will ensure that human health and the environment continue to be protected. The USEPA, by finalizing the Second Amended ROD, believes that a monitored natural attenuation remedy is the best course of action for addressing the contaminants at the IEL site. However, as stated in the Amended ROD, the benzene dissolved in the shallow groundwater beneath the middle of the landfill will be further investigated and, if warranted, remediated by alternative techniques.

Monitoring wells within the IEL

IEL Site and Surrounding Properties with Historical Trends in Extent of Groundwater Contamination



Clean-Up—Natural Attenuation

- USEPA has recently recommended monitored natural attenuation with a vegetative cover as the preferred clean-up method for IEL
- Natural Attenuation is a natural process that breaks down or reduces the concentration of contaminants.
- Natural Attenuation involves several processes including:

  1 destroying or converting to something less toxic
  2 reducing the concentration to a point it will not cause a risk
  3 binds the constituents to the soil preventing migration

Clean-up Method

Natural attenuation is the name given to a cleanup technique that relies on physical, chemical and/or biological processes that will slow the migration of constituents or destroy contaminents in soil or groundwater.

Natural attenuation processes happen to some degree in all contamination sites but do not always work fast enough to be selected as the only remedy for cleaning up a site. Natural attenuation can work in three ways:

- It can destroy the constituents or convert them into something less toxic (via biological or chemical processes);
- It can reduce the concentrations of constituents to a point where they no longer pose a risk (through destructive processes or dilution); or
- It can bind the constituents to the soil and prevent them from migrating.

The USEPA and Natural Attenuation

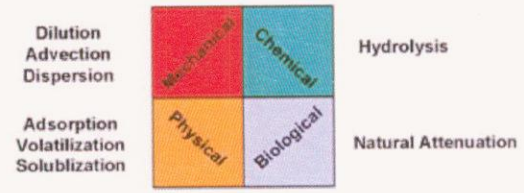
USEPA considers monitored natural attenuation to be a cleanup option that may be appropriate for some sites. USEPA does not view the selection of natural attenuation as a "no action" or "walk-away" approach. It considers natural attenuation to be an effective means of cleaning up a site where:

- All measures necessary to protect human health and the environment have already been taken;
- Natural attenuation will clean up the site in a reasonable time frame compared to other options; and,
- The progress of the cleanup is monitored to ensure that the conditions at the site continue to be protective of human health and the environment.

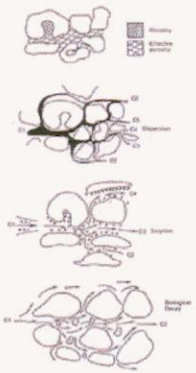
Natural Attenuation Processes

Research from many sources around the world has identified processes that destroy constituents in the environment. Some of these processes are biological in nature--microbes that are naturally-occurring in the ground will use the chemicals as a source of energy or food. The eventual end products of these biological processes are non-toxic (such as carbon dioxide and water) or are manageable by other means (methane can be burned).

Natural Attenuation is the naturally occurring reduction in contaminant concentrations by:



Conceptual Natural Attenuation Processes



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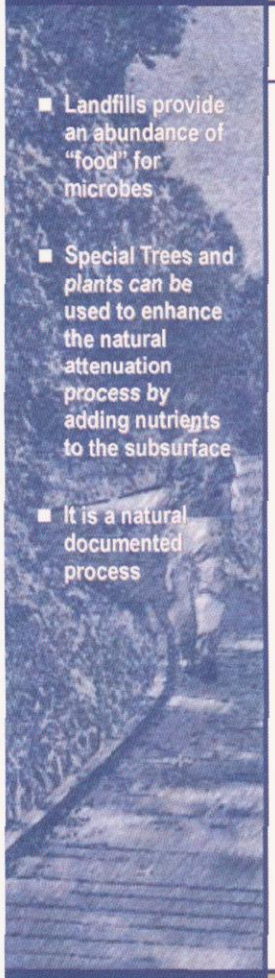
Clean-Up—Natural Attenuation



- Landfills provide an abundance of "food" for microbes
- Special Trees and *plants can be* used to enhance the natural attenuation process by adding nutrients to the subsurface
- It is a natural documented process

How does it work?

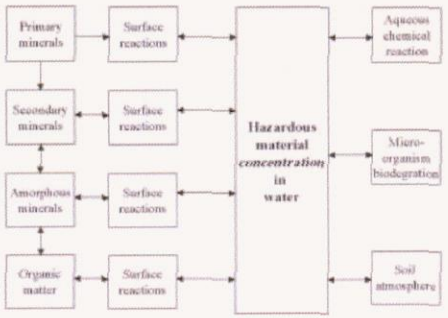
Landfills, with their abundance of "food" (either actual food waste or other organic chemicals), eventually develop enormous populations of microbes that consume the contaminants. The natural attenuation processes operating in landfills are some of the same processes that we depend upon to destroy constituents in our home septic systems and large waste water treatment plants.

Three types of microbial processes that can be found at many landfills include:

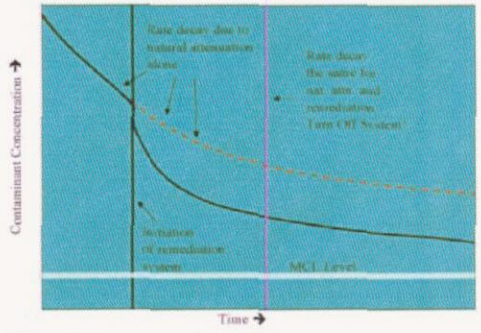
- *Methanogenesis:*
  Every landfill has microbes that (in the absence of oxygen) will convert garbage and other organic contaminants into methane and water.
- *Aerobic Biodegradation:*
  These microbes rely on oxygen. Sewage treatment plants (among others) use microbes in the presence of oxygen to destroy sewage and other organic constituents--converting them to carbon dioxide and water.
- *Co-Metabolism:*
  Some chlorinated organic contaminants are destroyed by the byproducts of microbes as they consume other organic contaminants. This is called co-metabolism. Chlorinated organic contaminants may also be destroyed by direct microbial action.

In addition to these processes occurring naturally (where conditions permit), they are also used in landfills, sewage treatment plants, breweries and pharmaceutical manufacturing plants.

Natural Attenuation Flow Diagram



Natural Attenuation vs. MCLs



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Additional Resources

Additional Resources

Information gathered for this report was researched from many sources. The list below provides additional selected resources beyond what was presented in this program.

Bioremediation Resources	http://www.nal.usda.gov/bic/Biorem/biorem.htm
Buckeye Trail	http://www.buckeyetrail.org/
Clean Ohio Fund	http://www.state.oh.us/cleanohiofund
EPA Region 5	http://www.epa.gov/region5/sites/iel/
Lake Township Chamber of Commerce	http://www.lakechamber.com/
Lake Township Community Advisory Group	http://www.ltcag.com/index.php
Natural and Accelerated Bioremediation Research	http://www.lbl.gov/NABIR/
Responding Companies	http://www.ielcleanup.com/index.htm
Scenic Railroad Trail—Metroparks serving Summit County	http://www.neo.lrun.com/MetroParks/
Stark County Park System	http://www.starkparks.com/
USEPA	http://www.epa.gov/
USEPA Superfund Sites	http://www.epa.gov/superfund/sites/
Quail Hollow State Park	http://www.quailhollow.org/

No representations are provided as to these sites or the accuracy of the information or data obtained therefrom.